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HIV/Hepatitis Prevention in Drug Abuse Treatment Programs: Guidance From Research

A large body of research examines the relationship between HIV and drug dependence, but considerably less information is available on viral hepatitis and drug dependence. This article summarizes research indicating what drug abuse treatment programs can do to prevent their patients from acquiring HIV or hepatitis infection and to limit the consequences for patients who are already infected. Drug treatment programs can play a pivotal role in preventing, detecting, and treating HIV and hepatitis. Some activities can be accomplished by providers' simply becoming aware of the issues; others will require significant infusion of leadership, education, and fiscal support.

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In the United States, drug users have been disproportionately affected by the AIDS epidemic. As a result, the substance abuse research community has developed substantial knowledge about how to prevent HIV infection and systems to facilitate the management of those already infected. Yet, the drug treatment practitioner's current knowledge of hepatitis, particularly hepatitis C, is similar to what was known about AIDS a decade ago. There is a growing, but still incomplete, understanding of the transmission of hepatitis C, its acute presentation, and how it behaves as a chronic infection. Treatment is available for chronic hepatitis C. While treatment effectiveness may be limited, the importance of detecting hepatitis C infection, particularly acute (new-onset) infection, has been bolstered by recent evidence that treatment during the acute stage may prevent the establishment of chronic infection (Jaekel et al., 2001).

In drug treatment programs, addressing medical issues such as infectious diseases may be secondary to the goal of reducing patients' drug abuse. Staff members in drug treatment programs may wonder how much attention they should give to these problems, particularly if they feel they have little to offer clients by way of prevention or treatment. Nevertheless, by decreasing drug use and HIV risk behaviors and by educating patients about HIV, drug abuse treatment has become one of the most powerful AIDS prevention techniques in our public health arsenal. With adequate funding and public health support, drug abuse treatment programs can play a central role in preventing and detecting hepatitis as well.

Drug abuse treatment providers have unequalled opportunity to reach drug abusers with health information and interventions. This article presents a number of suggestions, based on research, about what a drug treatment program can do to address HIV and hepatitis infections. First we review the extent of these infections among drug users. Then we discuss techniques for using research-developed assessment and diagnostic tools. Finally, we suggest primary and secondary preventive activities that a treatment program can implement to limit the spread and consequences of infection.

PREVALENCE OF HIV AND HEPATITIS AMONG DRUG USERS

The prevalence of HIV among drug users entering treatment varies across different settings, ranging from 0 to 35 percent. Some transmission of HIV continues among those in drug abuse treatment, especially younger injecting drug users (IDUs) (Murrill et al., 2001). IDUs are at high risk of infection with HIV and hepatitis A, B, and C viruses through unsterile injection practices and unsafe sexual behaviors. Injection drug use is a factor in one-third of all AIDS cases in the United States, more than one-half of new HIV infections, and one-half of new hepatitis C infections. IDUs as a group have high prevalence of viral hepatitis: Approximately 40 to 70 percent develop hepatitis A infection at some time in their injection careers, while their prevalence rates for hepatitis B and C are 50 to 90 percent. Some noninjecting users of illicit drugs, such as crack smokers, are also at risk of contracting viral hepatitis.

Hepatitis is an inflammation of the liver, most often caused by alcohol or a virus. In the past, health providers often assumed that nearly all drug users were infected with hepatitis A and B by the time they entered drug abuse treatment, but today significant numbers of drug users in the community are free of these viruses. Thus, many patients entering treatment could benefit from vaccines to protect against hepatitis A and B. Although many or most IDUs become infected with hepatitis C during their first year of injecting, some patients entering treatment programs are still uninfected and susceptible.

TRANSMISSION OF HIV AND HEPATITIS

HIV is transmitted through sharing of unsterile syringes and through unprotected sexual activity. The virus

may also be transmitted from mother to child during birth and the weeks before and after—the perinatal period. New data suggest that sexual transmission of HIV is also an important mode among IDUs: Male IDUs who have sex with men and female IDUs who trade sex for money are more likely to become HIV-infected than IDUs who do not engage in those behaviors (Kral et al., 2001).

There is significant overlap between modes of transmission and hence between risk factors for HIV and hepatitis A, B, and C. Because HIV and hepatitis are transmitted by many of the same routes, risk-reduction efforts aimed at HIV transmission have also reduced the spread of hepatitis. However, hepatitis can be transmitted in more ways than HIV. Hepatitis A and B may be transmitted to household members and other close contacts who are not sexual partners.

Hepatitis A is spread through unsanitary living conditions, inadequate personal hygiene, and direct or indirect anal-oral contact, including sexual behaviors. Transmission of the virus in feces predominates, but hepatitis A is also transmitted via contact with contaminated drug injection equipment. Use of contaminated water to prepare drugs and contamination of drugs hidden in the rectum may play a role. Hepatitis A causes acute, not chronic, inflammation of the liver.

Hepatitis B virus is found in the semen, blood, and saliva of infected persons and is usually spread by contaminated syringes and unprotected sexual contact. From 1 to 10 percent of patients develop chronic liver inflammation, which may progress to cirrhosis and liver cancer.

Hepatitis C virus is transmitted through contaminated blood (for example, during syringe sharing) and through needle-stick injuries and unprotected sexual contact. In addition, recent research shows hepatitis C transmission associated with the sharing of unsterile injection equipment other than syringes (cookers, filtration cotton, rinse water) (NIDA, 2000). Hepatitis C appears to spread more rapidly among IDUs than does HIV, because of higher prevalence of hepatitis C among injection partners and a higher infectivity of hepatitis C once it gets into the bloodstream (Garfein et al., 1996; Hagan and Des Jarlais, 2000). From 10 to 60 percent of individuals infected with hepatitis C virus develop some form of chronic liver inflammation.

Drug abuse treatment and interventions such as syringe exchange and outreach, which have focused on reducing the use of contaminated syringes, have been associated with lower incidence of HIV infection but have had less consistent or no effects on new cases of hepatitis C. To affect the transmission of hepatitis C, risk-reduction interventions are needed that address not only syringe use, but also sexual behaviors and the use of injection paraphernalia in addition to syringes (such as filtration cottons, cookers, and rinse water).

STAFF ASSESSING PATIENTS' RISKS

Tools Available

Drug abuse treatment programs can incorporate risk assessment and educational messages about HIV risks into their intake and counseling protocols. The assessment must be done with an instrument that can reliably measure both drug-related and sex-related risk behaviors. Several self-report measures have been designed to assess drug use, injection practices, and sexual behaviors associated with HIV risk. Among the most widely used instruments are three that have demonstrated high reliability and validity: the Risk Behavior Assessment Questionnaire (NIDA, 1991), the Risk Assessment Battery (Treatment Research Institute, www.trresearch.org/Assessment%20Inst/Assess_inst.html), and the Texas Christian University (TCU) AIDS Risk Assessment (Camacho et al., 1997; www.ibr.tcu.edu).

The Risk Assessment Battery Questionnaire and TCU AIDS Risk Assessment may be particularly useful in clinical settings because they can be administered in 15 minutes or less and require minimal staff training. A computerized version of the Risk Assessment Battery is as accurate as the paper-and-pencil version (Navaline et al., 1994). To maximize the accuracy of assessments, counselors can establish a non-judgmental context; explicitly assure patients of privacy and confidentiality; explain why questions are being asked (when the purpose of questions is not obvious to a patient); consider the impact of related problems (such as psychiatric or legal difficulties) on assessment of risk behaviors; and, where appropriate and feasible, use self-administered or computerized tests to eliminate the need for patients to report socially sensitive information face to face.

Laboratory Testing and Counseling

Given the demonstrated clinical value of medical and psychosocial interventions to treat and prevent HIV, drug abuse treatment programs should offer HIV testing and counseling. The only exceptions would be programs that see patients for shorter periods than the time needed to obtain test results and provide feedback. In general, IDUs who know they are infected engage in high-risk activities less frequently than those who are not infected or do not know their HIV status. While patients newly diagnosed with HIV occasionally develop stress reactions and inject drugs more frequently, such responses are generally transient and not usually associated with the increases in risky injection behaviors that can lead to further HIV transmission. Supportive pretest and post-test counseling, which can anticipate such reactions and reduce their impact, are an indispensable part of the testing process.

The rates of false positive reactions among HIV tests (which routinely include both ELISA and Western Blot assays) are extremely low; hence, any confirmed positive test should be taken as evidence of HIV infection. In the rare circumstances in which HIV Western Blot results are indeterminate, individuals should be referred for expert evaluation.

Blood tests can indicate whether a patient is susceptible to hepatitis A or B (and thus should receive vaccine) or has antibodies that reflect previous exposure and immunity (in which case vaccination is not needed). The tests can also reveal whether a patient has active or resolved hepatitis B infection. For the hepatitis C virus, an antibody test reveals only prior exposure to the virus and does not indicate whether the infection is new (acute), chronic (long-term), or resolved. Findings indicating chronic active hepatitis B infection or evidence of exposure to hepatitis C infection should prompt referral for clinical evaluation and possible treatment. Screening for hepatitis B has been recommended as a routine part of care in drug abuse treatment programs (Center for Substance Abuse Treatment, 1995; www.health.org/govpubs/bkd131/), and these programs are valuable settings for hepatitis A and C screening, as well. For more specific guidance in the interpretation of hepatitis tests, see box, "How To Interpret Hepatitis Test Results," page 7.

PRIMARY PREVENTION OF INFECTION

We use “primary prevention” to describe strategies to limit the drug abuse patient’s exposure to infectious agents and to minimize the impact of such exposure. Primary prevention efforts include education and counseling, vaccination, and outreach to bring IDUs into treatment.

Risk Education

To address the problem of HIV/AIDS among patients and their contacts, drug abuse treatment programs have incorporated education about reducing risky behavior as part of drug counseling protocols. Gibson and colleagues (1998; also <http://hivinsite.ucsf.edu/InSite.jsp?page=kb-07&doc=kb-07-04-01-01>) reviewed the controlled research evaluations of a range of counseling interventions aimed at preventing IDUs from acquiring HIV/AIDS. They found that more intensive interventions—that is, those with more patient contact—seemed to reduce risky injection drug use practices and sexual behaviors more than did less intensive interventions. Components of successful programs include individual or group counseling sessions focused on skill-building, relapse prevention, and HIV counseling and testing.

Drug abuse treatment programs and syringe exchange programs (SEPs) can improve, however, at providing hepatitis prevention education and interventions. In a recent survey at two New York City SEPs, the majority of IDUs had previously been in drug abuse treatment. Although most were concerned about hepatitis, most had not been tested for hepatitis C virus, were not aware that vaccines were available to prevent hepatitis A and B, and did not know that hepatitis C therapy existed (Perlman et al., 2001).

While there is debate about the optimal approach to hepatitis C treatment for active drug users (Edlin et al., 2001), few would argue against providing education about how to reduce risks for hepatitis as part of drug abuse counseling. Those entering drug abuse treatment should be provided with education about viral hepatitis and offered hepatitis testing. Counseling can help prevent new infection among those who are still susceptible and help those already infected to avoid transmitting the disease to others. The content of counseling should reflect emerging evidence that sharing of cottons and cookers transmits hepatitis C, that risk-reduction strategies applied to HIV prevention can also help to prevent hepatitis transmission, and that

vaccination for hepatitis A and B may be important if the patient is susceptible.

Patients with chronic hepatitis B infection or recent or chronic hepatitis C infection should be advised that treatment exists that can help prevent progression of the disease, and they should be referred for evaluation for therapy. Chronic hepatitis B infection or other liver disease may be treated with lamivudine, which is associated with improvement in liver function in more than 50 percent of patients treated. Treatment of chronic hepatitis C infection with alpha interferon agents alone (either alpha interferon or PEG-alpha interferon) or in combination with ribavirin may prevent progression of, or even reverse, liver disease in infected patients. Overall, about 30 to 40 percent of all patients can expect to have sustained

There is significant overlap between modes of transmission and hence between risk factors for HIV and hepatitis A, B, and C.

How To Interpret Hepatitis Test Results

Hepatitis B

- The absence of any hepatitis B markers demonstrates susceptibility to hepatitis B; vaccination is indicated.
- The presence of hepatitis B surface antigen demonstrates active hepatitis B infection, which may progress to chronic liver disease. False positive tests are extremely uncommon.
- The presence of hepatitis B surface antibody demonstrates immunity to hepatitis B, either from prior vaccination (in which case the hepatitis B core antibody would be negative) or from prior naturally acquired but resolved disease (in which case hepatitis B core antibody would be positive).
- Some individuals may have isolated hepatitis B core IgG antibody reactivity. This may be due to either low-level active infection (in which case a hepatitis B DNA test would be positive) or very remote resolved hepatitis B infection with loss of hepatitis B surface antibody over many years (the development of hepatitis B surface antibody in response to a dose of vaccine confirms this) or to a false positive hepatitis core antibody test. In the latter instance, hepatitis B vaccination is indicated.

Hepatitis C

- Hepatitis C antibody reactivity means that hepatitis C infection is likely. Referral for clinical evaluation is indicated
 - to confirm active hepatitis C infection by documenting detectable hepatitis C virus by a viral load assay,
 - to assess for liver disease with liver function tests, and
 - possibly, to conduct a liver biopsy to consider treatment of hepatitis C.

What a Drug Treatment Program Can Do To Incorporate HIV/Hepatitis Prevention

Assessment and Diagnosis

Assess risks of acquiring or transmitting infection
Obtain history of prior hepatitis disease and/or vaccination
Conduct serologic screening for HIV and hepatitis
Identify candidates for HIV treatment and for hepatitis A and B vaccines

Preventing Infection (Primary Prevention)

Engage patient in drug abuse treatment
Provide pre- and post-test counseling when screening for HIV and hepatitis
Educate and provide counseling about risky needle use and sexual risk behaviors
Deliver hepatitis A and B vaccines
Build ties to outreach agencies

- Syringe exchange programs
- HIV counseling and testing centers
- Community outreach agencies

For IDUs who continue to inject, refer to reliable sources of sterile syringes

Limiting the Consequences of Disease (Secondary Prevention)

Link patients to or provide primary medical care (active referral strategies, on-site care)
Link patients with agencies that address their problems with retention in medical care and drug abuse treatment
Promote medication adherence: reminder systems, social support, incentive strategies

General Information and Communications

Keep abreast of changing research, ethical and legal issues
Educate staff and community about medical complications of drug abuse and treatment options
Join community leaders and patient representatives in providing information about how to address HIV and hepatitis more effectively

Drug treatment programs are in a pivotal position to reach a population that is at risk for HIV and hepatitis and has high prevalence of those diseases.

viral clearance with the combination of an interferon agent and ribavirin. Recent data suggest that the treatment of acute hepatitis C can prevent the establishment of chronic hepatitis C infection (Jaekel et al., 2001).

Vaccines

Although there is not yet any vaccine against hepatitis C, vaccination can prevent hepatitis A and B. For those with chronic hepatitis C infection who are susceptible to hepatitis A or B, vaccination is important, since infection with other forms of hepatitis may lead to liver failure. The rates of vaccination for hepatitis A and B are low among IDUs, however, suggesting lost opportunities for prevention. The most successful vaccine delivery systems to date are those

that either administer vaccines at the drug abuse treatment site or use incentives to encourage patients to follow through on being vaccinated elsewhere. Models based solely on providing vouchers for free vaccines have produced less impressive rates of completed immunization (Des Jarlais et al., 2001).

Two vaccines for hepatitis A and two for hepatitis B have been approved for use in the United States. They should not be given to patients with prior hypersensitivity to the vaccines or their components. Hepatitis A and hepatitis B vaccines may be used together, generally minimizing inconvenience to patients without increasing adverse effects or decreasing effectiveness. Providing the two vaccines at the same time may also increase the likelihood that patients will complete the vaccine series. The hepatitis A vaccine is given at month 0 (the start of hepatitis treatment) and 6 months; the hepatitis B vaccine is given at 0, 1, and 4 to 6 months. Alternatively, for patients who need immunization against both hepatitis A and B, a recently approved combination vaccine may be used (at 0, 1, and 4 to 6 months) to reduce the number of injections.

Although complete courses of each vaccine are needed for optimal benefit, there is significant clinical value to patients who receive incomplete courses or even single doses; therefore, there is no need to guarantee that a patient will complete the series before initiating vaccination. To ensure that susceptible drug abusers receive at least one vaccine dose, the usual practice is to obtain a blood sample for testing and administer a first dose of vaccine at the initial visit.

Hepatitis B vaccination in SEPs has been a useful component of the public health response to a hepatitis B outbreak among IDUs in Pierce County, Washington. A pilot study of SEP-based hepatitis B vaccination in New York City had an 83-percent rate of completed vaccine series (Des Jarlais et al., 2001).

Outreach to IDUs

Drug abuse treatment programs can build ties to other community-based programs for cooperative efforts in HIV and hepatitis prevention. Some SEPs offer HIV counseling and testing, flu and pneumonia vaccines, and other medical services either at the program site or by referral elsewhere. Many SEPs provide prevention services in neighborhoods where drug users live to reach those who are unwilling or unable to use conventional services elsewhere. SEPs can also promote

prevention by linking IDUs—including those contacted through outreach efforts such as field workers' visits to homes and shooting galleries—with drug abuse treatment. In one study, Heimer (1998) found that both SEP and non-SEP clients used the SEP to obtain referrals to drug abuse treatment, and of those requesting treatment, 60 percent started therapy. Moreover, compared with clients referred by other sources, drug users referred by SEPs have comparably good short-term drug abuse treatment outcomes.

HIV counseling and testing centers where drug users present for confidential or anonymous HIV testing have the potential to serve as sources of referral to drug abuse treatment, medical care, and other prevention services. The advantage of this approach is that the initial contact may afford the provider an opportunity to engage the patient in ongoing prevention and drug abuse treatment services.

Community outreach, which relies on peers and community residents to identify out-of-treatment drug users and initiate risk-reduction counseling, may also serve as a conduit to prevention services. Basic risk-reduction activities usually include raising awareness about HIV and other blood-borne diseases, teaching skills to reduce risky drug use and sexual behaviors, providing materials for protection (for example, condoms and bleach), and counseling and testing for HIV. Studies show that outreach interventions are effective in reducing risky injection drug use practices and increasing protective behaviors, including entry into drug abuse treatment, needle disinfection, and condom use (Coyle et al., 1998). Drug treatment personnel could benefit from reading NIDA's manual on how to conduct effective community outreach (NIDA, 2000).

In summary, linkages between drug abuse treatment programs and community-based prevention services, such as SEPs and HIV counseling and testing centers, have the potential to reduce the risk of both HIV and hepatitis. Creating formal agreements or linkages between drug abuse treatment programs and these referral sources may assist drug users in accessing drug abuse treatment, prevention, and health care services.

SECONDARY PREVENTION: LIMITING DISEASE CONSEQUENCES

The term “secondary prevention” here refers to interventions for people who are already infected with HIV

or hepatitis. The goals of secondary prevention are to limit the medical consequences of infection and diminish the further spread of the disease. An excellent manual for drug abuse treatment providers offers a range of tips and suggestions (Center for Substance Abuse Treatment, 2000), including ways to incorporate primary medical care, mental health, and social services into drug abuse treatment programs; to link with other “wrap-around” services such as case management; and to keep abreast of changing legal and ethical issues of treating people who have HIV infection.

Links to Primary Care

Patients in drug abuse treatment may encounter substantial barriers to receiving health care, such as lack of insurance or transportation, perceived attitudes of providers, social disorganization, and competing priorities. Patients generally receive few medical services while in drug abuse treatment, yet drug treatment programs can play a critical role in determining outcomes such as acceptance of therapy, appointment-keeping, and adherence to medication schedules.

Research has provided a growing body of evidence that delivering medical and psychosocial services at drug abuse treatment sites increases patients' utilization of primary medical care, medical screening, and mental health services; improves medication compliance and medical outcomes, retention in treatment, and substance use outcomes; and reduces emergency room visits (e.g., Selwyn et al., 1989). Moreover, HIV-related medical care programs incorporated into drug abuse treatment settings show high rates of utilization and medication compliance and have the potential to deliver hepatitis prevention services to drug users (Selwyn et al., 1989).

Service delivery models that provide medical care onsite at drug abuse treatment programs (or nearby) have several advantages, including attention to multiple service needs during a single visit, enhanced communication between drug treatment and primary care providers, and the ability to accommodate patients who at times visit without appointments. Combining drug abuse treatment with regular medical care is associated with fewer subsequent hospitalizations. Therefore, averting costs of inpatient stays by promoting continuity of medical and drug abuse treatment either onsite or through linkage mechanisms may prove to be a cost-effective model of care for drug abusers.

Links to Other Services

Relatively few studies have examined the effectiveness of various linkage mechanisms to promote use of medical services among individuals enrolled in drug abuse treatment programs. Linkage strategies that have been used to improve drug abuse patients' access to medical care include case management and transportation. Findings on the utility of case management to increase access to medical care have been mixed, however, and successful case management may not be possible without funding initiatives to support such programs. Although few studies have examined the influence of transportation on utilization of drug abuse treatment services, some evidence suggests that transportation may be an important linkage mechanism (Friedmann et al., 2000).

Promoting Medication Adherence

By helping patients take needed medications, drug abuse treatment programs can play an important role in the delivery of HIV/hepatitis preventive and medical services. Any hepatitis vaccination program must consider issues of adherence, as completion of the vaccine series affords optimal protection. Specific data on factors affecting retention of IDUs in hepatitis prevention programs are sparse, but a number of drug use, demographic, and behavioral factors have been associated with patients' failure to comply with treatment for drug abuse, TB, and HIV and with other medical interventions. Hence, programs designed to deliver HIV and hepatitis prevention interventions to IDUs in treatment settings should make use of strategies demonstrated or likely to promote greater adherence, such as positive reinforcement, incentives, and other strategies (see box, "What a Drug Treatment Program Can Do To Incorporate HIV/Hepatitis Prevention," page 8).

CONCLUSION

Staffs in drug abuse treatment programs have considerable ability to prevent, detect, and diminish the adverse consequences of HIV and hepatitis A, B, and

C viruses. The boxed text summarizes the evidence-based interventions that we recommend. Many of these activities (for instance, educating the staff about hepatitis) do not require additional resources, and some, such as building linkages to potential affiliate programs, make good sense for any organization. Other potentially valuable interventions may not be feasible within a treatment program's current budget; for example, vaccinating patients for hepatitis A and B may be beyond the services usually provided. Many of these interventions require the involvement of the community's public health leadership. Combining drug abuse treatment with both hepatitis vaccination and interventions to reduce risk behaviors has the potential to be a highly efficient, synergistic approach to hepatitis prevention for IDUs and their contacts.

Drug treatment programs are in a pivotal position to reach a population that is at risk for HIV and hepatitis and has high prevalence of those diseases. Researchers and practitioners can be a powerful team, especially working with policymakers, to determine how drug abuse treatment programs can prevent HIV and hepatitis in their communities, to further disseminate research-based interventions, and to bring many of the new HIV and hepatitis strategies into local treatment settings.

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